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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/714,341	11/16/2000	Hans Eberle	1004-4253-1	6497

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EXAMINER

LEE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 04/08/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/714,341

Applicant(s)

EBERLE ET AL.

Examiner

Timothy Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4-6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-7, 8-10, 13, 14, 17, 18, 21-23, and 27-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonomi et al. (US 5,838,681).

3. Regarding claims 1, 8, 21, and 23, Bonomi et al. discloses a system that allocated port capacity in accordance with the requirements of the user at the port. The total aggregate switch capacity of the node may be allocated according to a predetermined schedule, or dynamically and flexibly allocated to the node ports up to the total aggregate switch capacity on a real-time basis in accordance with the actual traffic demands, i.e., requirements of each port. See col. 8, lines 61-66. Bandwidth may be allocated to a port by responding to an explicit request for bandwidth from the user connected to that port (with first requests...with regular requests). See col. 9, lines 24-26. Fig. 7 shows a timeline which is segmented into successive frames. Each frame is further subdivided into four intervals of time slots, each corresponding to one port. Cells entering the four ports would be inserted into the same four time slots of each successive frame. See col. 12, lines 17-35. If, however, it was desired to operate a port at ½ bandwidth, the data rate into that port would be cut in half, which would be accomplished by controlling the adaptor to transmit cells to the port only ½ of the time (allocating a first group...the first group being allocated for a particular time slot). See Fig. 7, and col. 12, lines 39-53. During the

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frames in which there are no data cells from that port, the unused time slots corresponding that port's time position within the frames may be used for the cells from other ports, in effect time division multiplexing a number of ports into the same time slot position (subsequently allocating a second group of one or more of the resources for the particular time period...the first and second group of resources being mutually exclusive). See col. 12, lines 61-66, and Fig. 8 as an example.

4. Regarding claim 8 more specifically, Fig. 1 shows a node which interconnects a working station with any other working station (a plurality of sources and a plurality of targets). See Fig. 1, and col. 4, lines 45-59.

5. Regarding claim 21 more specifically, the implication exists in Bonomi et al. that one source will be given priority over another source. In talking about the "unused" slots by a source, this implied that the source has priority over that slot and gives up the "unused" slots back to the system to be reallocated to other resources, likely of less priority. See col. 12, lines 61-66. Bonomi et al. also discloses allocating port capacity according to a predetermined schedule. See col. 14, lines 21-22. Thus, the source given first allocation can be said to have the "precalculated schedule" and all of the sources allocated later are the result of "regular requests." As mentioned, the CPU controls the allocation of bandwidth and keeps track of the bandwidth allocated to each port and the total allocated bandwidth, and is able to intelligently reallocate bandwidth according to demands. See col. 12, lines 8-11.

6. Regarding claim 23, Konomi et al. also implies that allocation of the time slot and the unused portions of it can be done in "phases," where one source is given priority to use the time slot, and the unused slots are given to other sources during a later phase.

7. Regarding claim 2, as mentioned previously, Fig. 1 shows that that data paths are the resources that are being requested for.

8. Regarding claim 4, as mentioned previously, data can be sent in the time slots on a periodic basis, and the requests were for these time slots, so it must logically follow that the requests were for resources that occur on a periodic basis.

9. Regarding claim 6, Bonomi et al. discloses that the CPU can also allocate based on monitoring the queue lengths. If the queue length changes with time, then the “request” that comes from reading the queue length information will be non-periodic in nature because it will change depending on the queue length.

10. Regarding claims 5 and 7, as mentioned previously, Bonomi et al. discloses that the data is sent on a periodic basis with each time slot, so this implies that the request was for an isochronous-type of time slot.

11. Regarding claim 9, as mentioned previously, port capacity can be allocated by the CPU according to a predetermined schedule. See col. 14, lines 21-22.

12. Regarding claims 10, Fig. 8 shows an example where the scheduling is conflict free.

13. Regarding claims 13 and 14, as mentioned previously, the data sent in the time slots can be periodic in nature and be isochronous—the slots both occur on a regular basis and are of equal lengths.

14. Regarding claims 17, 22, and 27, Bonomi et al. discloses that the cross-bar can perform routing functions (a switch). See col. 13, lines 59-66.

15. Regarding claim 18, as mentioned previously, the implication exists in Bonomi et al. that one source will be given priority over another source. In talking about the “unused” slots by a

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source, this implied that the source has priority over that slot and gives up the “unused” slots back to the system to be reallocated to other resources, likely of less priority. See col. 12, lines 61-66. Bonomi et al. also discloses allocating port capacity according to a predetermined schedule. See col. 14, lines 21-22. Thus, the source given first allocation can be said to have the “precalculated schedule” and all of the sources allocated later are the result of “regular requests.” As mentioned, the CPU controls the allocation of bandwidth and keeps track of the bandwidth allocated to each port and the total allocated bandwidth, and is able to intelligently reallocate bandwidth according to demands. See col. 12, lines 8-11.

16. Regarding claim 28, the requests for the “unused” slots will be for only a single slot if that is the amount of data the source would like to send. Otherwise, as shown in Fig. 8, the other requests can be for periodic time slots.

17. Regarding claims 29 and 30, as mentioned previously, the data sent in the time slots can be periodic in nature and be isochronous—the slots both occur on a regular basis and are of equal lengths.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 3, 11, 12, 19, 20, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonomi et al..

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20. Regarding claims 3 and 24, Bonomi et al. discloses that the CPU is in charge of handling all requests and allocating the slots based on those requests. See col. 4, lines 26-29. Bonomi et al. does not expressly disclose splitting the CPU into two parts, where one part handles one type of request and the other part handles another kind of request. However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to split the CPU into two different functional parts in order to handle the two different types of requests. One would have been motivated to do this because this would have alleviated the burden of traffic that the CPU would have to handle, thereby allowing it to handle the requests it does receive more efficiently.

21. Regarding claim 11, similar to the rejection of claim 3, Bonomi et al. does not expressly disclose where the requests are preallocation requests for pre-allocated slots. However, it would have been obvious to allow pre-allocation requests to request for pre-allocated slots. One would have been motivated to do this because some resource might know that they'll need slots in order to transfer their stream of data ahead of time. Therefore, they can efficiently have the slots pre-allocated in preparation for transferring.

22. Regarding claim 12, Bonomi et al. does not expressly disclose implementing the scheduling in software; however, this would have been obvious to one of ordinary skill in the art. One would have been motivated to do this because elements implemented in software are easily modified and upgraded with less cost compared to hardware modifications.

23. Regarding claim 19, Bonomi et al. does not expressly disclose receiving a vector of both the pre-allocated requests and the regular requests; however, it would have been obvious to a send vector to the CPU of Bonomi et al. with that type of information. One would have been

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motivated to do this because it would have been more efficient to all of that information at one time as opposed to two separate times to save on overhead information.

24. Regarding claim 20, Bonomi et al. does not expressly disclose where the source receive the preallocated requests from a scheduling device of the preallocated resources; however, it would have been obvious to do so. One would have been motivated to do this because the source could use that information to send more data if it knows that it has been given more slots by the scheduling device.

25. Regarding claim 25, Fig. 8 shows an example where the scheduling is conflict free.

26. Regarding claim 26, Bonomi et al. does not expressly disclose where there will be conflicts; however, it would have been obvious that conflict could occur if multiple resources vie for the same time slot at the same time. One would have been motivated to do this because by allowing sources to contest for the time slots, it can be a more efficient use of the resources, even with the possibility of conflicts, because there won't be as many unused time slots.

27. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonomi et al. in view of Hayter et al. (US 5,577,035) and in light of the rejection to claim 1.

28. Regarding claim 15, Bonomi et al. does not expressly disclose sending multicast data. Hayter et al. discloses sending multicast cells throughout the network. See at least col. 6, lines 29-31. It would have been obvious to a person of ordinary skill in the art at the time of the invention to send multicast cells as taught by Hayter et al. in the system taught by Bonomi et al.. One would have been motivated to do this because if a source in Bonomi et al. wanted to send to multiple destinations, then the most efficient way would be through multicasting. This would

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reduce some of the overhead that would be associated with sending data on a purely individual basis to all of these destinations.

29. Regarding claim 16, as mentioned previously, the data in Bonomi et al. can be scheduled on a periodic basis.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Calvignac (US 6,370,148) and Takahashi et al. (US 4,792,944) disclose systems that either choose which resource should be sent or how the time slots in a given system should be used.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy Lee whose telephone number is (703)305-7349. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (703)305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TLL
Timothy Lee
April 2, 2004

A handwritten signature in black ink, appearing to read 'HASSAN KIZOU', written over the printed name.

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600